BIOCHEMICAL AND BIOPHYSICAL Research Communications

EDITORS

Ernesto Carafoli
Pedro Cuatrecasas
I. C. Gunsalus
Osamu Hayaishi
B. L. Horecker
M. Daniel Lane
William J. Lennarz
William D. McElroy
Claude Paoletti
William D. Phillips
Alberto Sols

Volume 149 • 1987

ACADEMIC PRESS, INC.

Harcourt Brace Jovanovich, Publishers

San Diego New York Boston
London Sydney Tokyo Toronto

Copyright © 1987 by Academic Press, Inc.

ALL RIGHTS RESERVED

No part of this publication may be reproduced or transmitted in any form, or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the copyright owner.

The appearance of the code at the bottom of the first page of an article in this journal indicates the copyright owner's consent that copies of the article may be made for personal or internal use, or for the personal or internal use of specific clients. This consent is given on the condition, however, that the copier pay the stated per copy fee through the Copyright Clearance Center, Inc. (27 Congress Street, Salem, Massachusetts 01970), for copying beyond that permitted by Sections 107 or 108 of the U.S. Copyright Law. This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale. Copy fees for pre-1987 articles are as shown on the article title pages; if no fee code appears on the title page, the copy fee is the same as for current articles.

0006-291X/87 $1.50

MADE IN THE UNITED STATES OF AMERICA

BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS

CONTENTS

Volume 149, Number 1, November 30, 1987

AUTHOR INDEX, Volume 149, Number 1, November 30, 1987 ii

Tumor Necrosis Factor Increases *in Vivo* Glucose Utilization of Macrophage-Rich Tissues *Károly Mészáros, Charles H. Lang, Gregory J. Bagby, and John J. Spitzer* 1

The Amino Acid Sequence of the Phosphorylation Domain of the Erythrocyte Ca^{2+} ATPase *Peter James, Elena I. Zvaritch, Michail I. Shakhparonov, John T. Penniston, and Ernesto Carafoli* 7

Interaction between the Gene 5 Protein, Gene 5 Protein/Single Stranded fd DNA Complex and Gene 8 Protein of the Filamentous Phage fd *Beverly A. Boehler-Kohler and Ihab Rasched* 13

Spermidine and Spermine Stimulate the Transport of the Precursor of Ornithine Carbamoyltransferase into Rat Liver Mitochondria *Carmen González-Bosch, Vicente J. Miralles, José Hernández-Yago, and Santiago Grisolia* 21

Evidence for Nucleoside Channeling *in Vivo*: Deoxythymidine Incorporation into Rat Liver dTTP and Nuclear Matrix DNA *P. L. Panzeter, J. L. Etheredge, D. E. Kizer, and D. P. Ringer* 27

Identification of Functional Regions in the C-Terminal Domain of *Escherichia coli* Ribosomal Protein S1 Using Monoclonal Antibodies *Véronique Hahn, Jean-Pierre Ebel, and Patrick Stiegler* 34

Estimation of Intramitochondrial pCa and pH by Fura-2 and 2,7-Biscarboxyethyl-5(6)-carboxyfluorescein Fluorescence *Michael H. Davis, Ruth A. Altschuld, Dennis W. Jung, and Gerald P. Brierley* 40

Purification of Cytochrome b_{558} from Bovine Polymorphonuclear Neutrophils *Françoise Morel and Pierre V. Vignais* 46

Correlation between Phosphorylation and Kinase Activity of a Tyrosine Protein Kinase: $P56^{lck}$ *I. Boulet, R. Fagard, and S. Fischer* 56

Atrial Natriuretic Peptide Receptors in Sympathetic Ganglia: Biochemical Response and Alterations in Genetically Hypertensive Rats *J. Silvio Gutkind, Masaki Kurihara, Eero Castrén, and Juan M. Saavedra* 65

3-Methylindole Inhibits Lipid Peroxidation *James D. Adams, Jr., Mikel C. Heins, and Garold S. Yost* 73

Cantharidin Poisoning Associated with Specific Binding Site in Liver *Michael J. Graziano, Andrew L. Waterhouse, and John E. Casida* 79

The Sugar-Specific Adhesion/Deadhesion Apparatus of the Marine Bacterium *Vibrio furnissii* Is a Sensorium That Continuously Monitors Nutrient Levels in the Environment *Charles Yu, Andy M. Lee, and Saul Roseman* 86

Thymine Glycol–DNA Glycosylase/AP Endonuclease of CEM-C1 Lymphoblasts: A Human Analog of *Escherichia coli* Endonuclease III *Keunmyoung Lee, William H. McCray, Jr., and Paul W. Doetsch* 93

Immunological and Spectral Characterization of Partly Purified Cytochrome Oxidase from the Cyanobacterium *Synechocystis* 6714 *Marnik Wastyn, Arno Achatz, Maria Trnka, and Günter A. Peschek* 102

Prostaglandin $F_{2\alpha}$ Initiates Polyphosphatidylinositol Hydrolysis and Membrane Translocation of Protein Kinase C in Swine Ovarian Cells *Johannes D. Veldhuis. With the technical assistance of Diana Juchter and James Garmey.* 112

Dependence of ATP Citrate Lyase Activity on Cell Density of Isolated Rat Hepatocytes *Anne Voss, Greg Reinhart, Susan Hogan, and Karla Roehrig* 118

A Novel Subtype of Muscarinic Receptor Identified by Homology Screening *Thomas Braun, Peter R. Schofield, Brenda D. Shivers, Dolan B. Pritchett, and Peter H. Seeburg* 125

Follistatin Specifically Inhibits Pituitary Follicle Stimulating Hormone Release *in Vitro* *Shao-Yao Ying, Ann Becker, Geoff Swanson, Phil Tan, Nicholas Ling, Fred Esch, Naoto Ueno, Shunichi Shimasaki, and Roger Guillemin* 133

Internal Anion Binding Site and Membrane Potential Dominate the Regulation of Proton Pumping by the Chromaffin Granule ATPase *Y. Moriyama and N. Nelson* 140
Protein Kinase C-Mediated Feedback Inhibition of the Ca^{2+} Response at the EGF Receptor *A. Pandiella, L. M. Vicentini, and J. Meldolesi* 145
Extracellular Ca^{2+} Induces a Rapid Increase in Cytoplasmic Free Ca^{2+} in Pancreatic β-Cells *Thomas Nilsson, Per Arkhammar, and Per-Olof Berggren* 152
Demonstration and Structural Comparison of Receptors for Insulin-like Growth Factor-I and -II in Brain and Blood–Brain Barrier *R. G. Rosenfeld, H. Pham, B. T. Keller, R. T. Borchardt, and W. M. Pardridge* 159
Occurrence of Ceramide-Glycanase in the Earthworm, *Lumbricus terrestris* *Yu-Teh Li, Yukitoshi Ishikawa, and Su-Chen Li* 167
Malignant Progression of a Transformed Rat Cell Line by Transfer of the v-*fos* Oncogene *Toyokazu Kawano, Shun'ichiro Taniguchi, Kohji Nakamatsu, Hiroyuki Sadano, and Tsuneo Baba* 173
Identification of an Arginine Vasopressin-like Diuretic Hormone from *Locusta migratoria* *Jacques P. Proux, Christine A. Miller, Jorge P. Li, Robert L. Carney, Adrien Girardie, Michel Delaage, and David A. Schooley* 180
Monoclonal Antibodies to Bovine Growth Hormone Potentiate Effects of the Hormone on Somatomedin C Levels and Growth of Hypophysectomized Rats *Michael Wallis, Margaret Daniels, Keith P. Ray, Janet D. Cottingham, and Roger Aston* 187
Comparison of the Effects of Treatment with the Polyamine Analog N^1,N^8-Bis(ethyl)spermidine or Difluoromethylornithine on the Topoisomerase II Mediated Formation of 4′-(9-Acridinylamino) Methanesulfon-*m*-anisidide Induced Cleavable Complex in the Human Lung Carcinoma Line NCI H157 *Steven C. Denstman, Stephanie J. Ervin, and Robert A. Casero, Jr.* 194
Early Inhibition of the Na^+/K^+-ATPase Ion Pump during Acetaminophen-Induced Hepatotoxicity in Rat *G. B. Corcoran, S.-J. Chung, and D. E. Salazar* 203
Evidence for the Presence of Low Density and Very Low Density Lipoproteins in Human Amniotic Fluid *M-S. C. Park and M. T. R. Subbiah* 208
Activation of the Endoplasmic Reticulum Ca^{2+} Pump of Pancreatic Acini by Ca^{2+} Mobilizing Hormones *Shmuel Muallem, Timothy G. Beeker, and Claus J. Fimmel* 213
Tumor-Promoting Phorbol Esters Interfere with the Vasoactive Intestinal Peptide Receptor/Effector System in Rat Prostatic Epithelial Cells *F. Escudero, M. J. Carmena, and J. C. Prieto* 221
Synthetic Tumor-Derived Human Hypercalcemic Factor Exhibits Parathyroid Hormone-like Vasorelaxation in Renal Arteries *Raymond J. Winquist, Elizabeth P. Baskin, and George P. Vlasuk* 227
A Defect in DNA Topoisomerase II Activity in Ataxia-Telangiectasia Cells *Rahmah Mohamed, Surinder Pal Singh, Sharad Kumar, and Martin F. Lavin* 233
The Effect of 1,25-Dihydroxyvitamin D3 Treatment on Calcitonin and Calcitonin Gene-Related Peptide mRNA Levels in Cultured Human Thyroid C-Cells *Gilbert J. Cote, Douglas G. Rogers, Eileen S. C. Huang, and Robert F. Gagel* 239
Characterization of Primary Translation Products from Ovine and Rat Salivary Gland mRNAs *R. Nichols, Don M. Carlson, and Jack E. Dixon* 244
The Cell Surface Hyaluronate Binding Sites of Invasive Human Bladder Carcinoma Cells *Raymond E. Nemec, Bryan P. Toole, and Warren Knudson* 249
12-Lipoxygenase from Bovine Polymorphonuclear Leukocytes, an Enzyme with Leukotriene A_4-Synthase Activity *Pauline Walstra, Jan Verhagen, Gerrit A. Veldink, and Johannes F. G. Vliegenthart* 258
Band 3 and Ankyrin Homologs Are Present in Eye Lens: Evidence for All Major Erythrocyte Membrane Components in Same Nonerythroid Cell *David P. Allen, Philip S. Low, Alice Dola, and Harry Maisel* 266
An Antibody to the Receptor for Insulin-like Growth Factor I Inhibits the Growth of MCF-7 Cells in Tissue Culture *Quynh T. Rohlik, David Adams, Frederick C. Kull, Jr., and Steven Jacobs* 276
The Homology of Complement Factor C8 γ-Chain and α-1-Microglobulin *Lois T. Hunt, Andrzej Elzanowski, and Winona C. Barker* 282

Human Proapolipoprotein A-I: Development of an Antibody to the Propeptide as a Probe of Apolipoprotein A-I Biosynthesis and Processing
Ashok V. Hospattankar, Thomas Fairwell, Ettore Appella, Martha Meng, and H. Bryan Brewer, Jr. 289
Apparent Molecular Weight of Substance P/Neurokinin-1 Receptors Determined Using a Photoaffinity Labeled Probe, [(3′-^{125}I) D-Tyr^{0}, (4′-N_3)Phe^{8}, Nle^{11}]-Substance P
Than-Vinh Dam, Emanuel Escher, and Rémi Quirion 297
Fast Motility of Isolated Mammalian Auditory Sensory Cells
Hans P. Zenner, Ulrike Zimmermann, and Alfred H. Gitter 304
Biological Screening of Monoclonal Antibodies
Ralph A. Jacobson, J. Denry Sato, and Gordon H. Sato 309
Tissue Specific Methylation of c-*myc* in Adult Chickens
C. Heinke, L. Andersen, S. Hagan, and K. S. Guise 313

Volume 149, Number 2, December 16, 1987

AUTHOR INDEX, Volume 149, Number 2, December 16, 1987 iii
Inter- and Intramolecular Deuterium Isotope Effects on the Cytochrome *P*-450-Catalyzed Oxidative Dehalogenation of 1,1,2,2-Tetrachloroethane
Dale B. Hales, Bert Ho, and John A. Thompson 319
Use of a Conserved Consensus Oligomer in the Identification of Cytochrome *P*-450 mRNAs *Christopher Hassett and Curtis J. Omiecinski* 326
Signal Transduction in Plants: Evidence for the Involvement of Calcium and Turnover of Inositol Phospholipids *A. S. N. Reddy, J. J. McFadden, M. Friedmann, and B. W. Poovaiah* 334
Observation of a Possible Pause Mutant in the Total Synthesis of T4 Lysozyme
S. A. Narang, J. Phipps, Fei-Long Yao, J. J. Michniewicz, G. Dubuc, and R. L. Somorjai 340
Isolation of cDNA Clones Corresponding to the M_r = 150,000 Subunit of Chick Type VI Collagen *Paolo Bonaldo, Francesco Bucciotti, and Alfonso Colombatti* 347
Alzheimer's Disease Fibroblasts Have Normal Repair of *N*-Methyl-*N*′-nitro-*N*-nitroso-guanidine-Induced DNA Damage Determined by the Alkaline Elution Techinique
Timothy J. Kinsella, Patricia P. Dobson, Albert J. Fornace, Jr., Susanna F. Barrett, Mary B. Ganges, and Jay H. Robbins 355
Purification and Physical Analysis of *Bacillus anthracis* Plasmids pX01 and pX02
Roger L. Kaspar and Donald L. Robertson 362
Identification of Three Classes of Hydrogenase in the Genus *Desulfovibrio*
Benet C. Prickril, Shao-Hua He, Ching Li, Nanda Menon, Eui-Sung Choi, Alan E. Przybyla, Daniel V. DerVartanian, Harry D. Peck, Jr., Guy Fauque, Jean LeGall, Miguel Teixeira, Isabel Moura, Jose J. G. Moura, Daulat Patil, and Boi H. Huynh 369
Subunit Interactions in the First Component of Complement C1 *Susan Lakatos* 378
A New Method for the Separation of the Constant and the Variable Fluorescence of Chlorophyll *a in Vivo* *J. C. Morissette and R. Popovic* 385
Synthesis and Processing of Killer Toxin from *Ustilago maydis* Virus P4
Gopi K. Podila, Robert F. Bozarth, and William H. Flurkey 391
Natural and Synthetic Forms of Insulin-like Growth Factor-1 (IGF-1) and the Potent Derivative, Destripeptide IGF-1: Biological Activities and Receptor Binding
F. John Ballard, Geoffrey L. Francis, Marina Ross, Christopher J. Bagley, Bruce May, and John C. Wallace 398
Comparison of Human Brain and Liver Glutamate Dehydrogenase cDNAs
Yoshiro Nakatani, Carl Banner, Matthias von Herrath, Mark E. Schneider, Hana Haleem Smith, and Ernst Freese 405
EPR Characterization of Vanadyl(IV) Species in Blood Cells of Ascidians
Hiromu Sakurai, Junko Hirata, and Hitoshi Michibata 411
Lamin A Is Not Synthesized as a Larger Precursor Polypeptide
Susan Lebel and Yves Raymond 417
Electron Paramagnetic Resonance Studies of the Tungsten-Containing Formate Dehydrogenase from *Clostridium thermoaceticum*
Joseph C. Deaton, Edward I. Solomon, Gerald D. Watt, Phyllis J. Wetherbee, and Charles N. Durfor 424

Engineering of the Hydrophobic Segment of the Signal Sequence for Efficient Secretion of Human Lysozyme by *Saccharomyces cerevisiae* *Yoshio Yamamoto, Yoshio Taniyama, Masakazu Kikuchi, and Morio Ikehara* 431

High-Resolution Proton NMR Spectra of Human Arterial Plaque *Jaroslav Zajicek, Justin D. Pearlman, Michael B. Merickel, Carlos R. Ayers, James R. Brookeman, and Michael F. Brown* 437

Ethanol Feeding to Rats Reversibly Decreases Hepatic Carnitine Palmitolytransferase Activity and Increases Enzyme Sensitivity to Malonyl-CoA *M. Guzmán, J. Castro, and A. Maquedano* 443

Nuclear Matrix Association Regions of Rat α_2-Macroglobulin Gene *Takashi Ito and Yoshiyuki Sakaki* 449

Evidence That the Heterodisulfide of Coenzyme M and 7-Mercaptoheptanoylthreonine Phosphate Is a Product of the Methylreductase Reaction in *Methanobacterium* *Thomas A. Bobik, Karl D. Olson, Kenneth M. Noll, and Ralph S. Wolfe* 455

Dynamic Properties of Microtubules at Steady State of Polymerization *Stephen R. Martin, Maria J. Schilstra, and Peter M. Bayley* 461

Specific Endogenous Na, K-ATPase Inhibitor Purified from Bovine Adrenal *Masaaki Tamura, Tim-Tak Lam, and Tadashi Inagami* 468

Direct Release of Angiotensins I and II from Isolated Rat Kidney Perfused with Angiotensinogen-Free Medium *Kenji Mizuno, Koichi Higashimori, Teruaki Imada, and Tadashi Inagami* 475

Specific Stimulation of Steroid 5α-Reductase Solubilized from Rat Liver Microsomes by Endogenous Phosphatidylserine *Kosuke Ichihara and Chikage Tanaka* 482

Functional α_2-Macroglobulin Half-Molecules Induced by Cadmium *François Pochon, Martine Barray, and Etienne Delain* 488

The A and B Forms of the Chicken Progesterone Receptor Arise by Alternate Initiation of Translation of a Unique mRNA *Orla M. Conneely, Beth Lynn Maxwell, David O. Toft, William T. Schrader, and Bert W. O'Malley* 493

Interleukin-1 Inhibits Follicle Stimulating Hormone-Induced Differentiation in Rat Granulosa Cells *in Vitro* *Paul E. Gottschall, Akira Uehara, Susan Talbot Hoffmann, and Akira Arimura* 502

Retinoic Acid Increases the Expression of NGF Gene in Mouse L Cells *D. Wion, R. Houlgatte, N. Barbot, P. Barrand, E. Dicou, and P. Brachet* 510

Are Sheep and Buffalo Prolactins Sulfated? *Rita Kohli, Neeraja Chadha, and K. Muralidhar* 515

Extracellular ATP Elevates Intracellular Free Calcium in Rat Parotid Acinar Cells *M. K. McMillian, S. P. Soltoff, L. C. Cantley, and B. R. Talamo* 523

Synthesis and *in Vitro* Bioactivity of Human Growth Hormone-Releasing Factor Analogs Substituted with a Single D-Amino Acid *Kazuki Sato, Mari Totta, Jingo Kageyama, Teh-Chang Chiang, Hsiao-Yu Hu, Ming-Hui Dong, and Nicholas Ling* 531

One-Step Processing of the Amphibian Vasotocin Precursor: Structure of a Frog (*Rana esculenta*) "Big" Neurophysin *Gilles Michel, Jacqueline Chauvet, Marie-Thérèse Chauvet, and Roger Acher* 538

Relationship in Adipose Cells between the Presence of Receptor Sites for High Density Lipoproteins and the Promotion of Reverse Cholesterol Transport *Ronald Barbaras, Pascal Puchois, Paul Grimaldi, Ahmed Barkia, Jean-Charles Fruchart, and Gérard Ailhaud* 545

Specificity of Insulin-like Growth Factor Binding to Type-II IGF Receptors in Rabbit Mammary Gland and Hypophysectomized Rat Liver *Bruno Barenton, Harvey J. Guyda, Cynthia G. Goodyer, Constantin Polychronakos, and Barry I. Posner. With the technical collaboration of Jean Parodo and Veronique Garandel* 555

A Biological Response Modifier, PSK, Inhibits Reverse Transcriptase *in Vitro* *Kunitaka Hirose, Michinori Hakozaki, Junji Kakuchi, Kenichi Matsunaga, Chikao Yoshikumi, Masaaki Takahashi, Tadafumi S. Tochikura, and Naoki Yamamoto* 562

The Effect of Ischemia and Recirculation, Hypoxia and Recovery on Anti-oxidant Factors and β-Adrenoceptor Density: Is the Damage in the Erythrocytes a Reflection of Brain Damage Caused by Complete Cerebral Ischemia and by Hypoxia? *Klaas Kramer, Hans-Peter Voss, Joop A. Grimbergen, Hendrik Timmerman, and Aalt Bast* 568

Controlled Cell Lysis and Protoplast Formation by Enhancement of Inhibitors of Alanine Racemase by Glycine *Michael P. Heaton, Robert B. Johnston, and Thomas L. Thompson* 576

Effects of a Platelet Activating Factor Antagonist (BN 52021) on Free Fatty Acids, Diacylglycerols, Polyphosphoinositides, and Blood Flow in the Gerbil Brain: Inhibition of Ischemia-Reperfusion Induced Cerebral Injury *Thomas Panetta, Victor L. Marcheselli, Pierre Braquet, Brigitte Spinnewyn, and Nicolas G. Bazan* 580

Depurination of Yeast 26 S Ribosomal RNA by Recombinant Ricin A Chain *Janice L. Bradley, Helder M. Silva, and Peter M. McGuire* 588

Decrease in Total and Free Magnesium Concentration following Traumatic Brain Injury in Rats *Robert Vink, Tracy K. McIntosh, Paul Demediuk, and Alan I. Faden* 594

Interactions of the Receptor for Insulin-like Growth Factor II with Mannose-6-phosphate and Antibodies to the Mannose-6-phosphate Receptor *Richard A. Roth, Cynthia Stover, Joji Hari, David O. Morgan, Michele C. Smith, Vicki Sara, and Victor A. Fried* 600

The Design of a Simple Competitive ELISA Using Human Proinsulin–Alkaline Phosphatase Conjugates Prepared by Gene Fusion *Christer Lindbladh, Mats Persson, Leif Bülow, Stephen Stahl, and Klaus Mosbach* 607

Experimental Evidence for a Zero-Order Ultrasensitivity in a Simple Substrate Cycle *Alain Cimino and Jean-François Hervagault* 615

Amino Acid Sequence of the Phosphopyridoxyl Peptide from P-Protein of the Chicken Liver Glycine Cleavage System *Kazuko Fujiwara, Kazuko Okamura-Ikeda, and Yutaro Motokawa* 621

Hemin Inhibits Virion-Associated Reverse Transcriptase of Murine Leukemia Virus *Ken Tsutsui and Gerald C. Mueller* 628

Primary Structure of Human Pancreatic Secretory Trypsin Inhibitor (PSTI) Gene *Akira Horii, Toshiaki Kobayashi, Naohiro Tomita, Tatsuo Yamamoto, Shinichi Fukushige, Tomoaki Murotsu, Michio Ogawa, Takesada Mori, and Kenichi Matsubara* 635

Secretion of a Growth Inhibitory Factor by ZR-75-1 Human Breast Cancer Cells *Rosalyn Blumenthal, William McLaughlin, Jerold Jordan, Ellen Cryan, and William Bloomer* 642

Monosodium Urate and Calcium Pyrophosphate Crystals Differentially Activate the Excitation–Response Coupling Sequence of Human Neutrophils *P. E. Poubelle, R. De Medicis, and P. H. Naccache* 649

Role for Protein Kinase C in A23187 Induced Glomerular Arachidonate Release and PGE_2 Production *Patricia A. Craven, Mark C. Patterson, and Frederick R. DeRubertis* 658

Complementary DNA for the Mouse Homolog of the Human Amyloid β Protein Precursor *Takeshi Yamada, Hiroyuki Sasaki, Hirokazu Furuya, Takashi Miyata, Ikuo Goto, and Yoshiyuki Sakaki* 665

Hybrid Molecules Containing the A-Domain of Insulin-like Growth Factor-I and the β–Chain of Insulin Have Increased Mitogenic Activity Relative to Insulin *Lucy Y-H. Tseng, Gerald P. Schwartz, Maqsood Sheikh, Zen Zen Chen, Satish Joshi, Jai-Fang Wang, S. Peter Nissley, G. Thompson Burke, Panayotis G. Katsoyannis, and Matthew M. Rechler* 672

Specific Binding Sites for [^{3}H]Inositol(1,3,4,5)tetrakisphosphate on Membranes of HL-60 Cells *Peter G. Bradford and Robin F. Irvine* 680

A 29-kDa GTP-Binding Protein Expressed in Mouse Brain, Lung, Kidney, Spleen, and Transformed NIH3T3 Cells *Hikaru Nagahara, Susumu Nishimura, Takashi Sugimura, and Hiroshi Obata* 686

A Human Immunodeficiency Virus Type 1 Infection-Enhancing Factor in Seropositive Sera *W. Edward Robinson, Jr., David C. Montefiori, and William M. Mitchell* 693

Partial Purification and Characterization of Thrombolamban, a 22,000-Dalton cAMP-Dependent Protein Kinase Substrate in Platelets *Thomas H. Fischer and Gilbert C. White II* 700

Thyrotropin Is a Potent Growth Factor for Normal Human Thyroid Cells in Primary Culture *Pierre P. Roger and Jacques E. Dumont* 707

Extraction of Osteocalcin from Fossil Bones and Teeth *M. M. W. Ulrich, W. R. K. Perizonius, C. F. Spoor, P. Sandberg, and C. Vermeer* 712

Protein Kinase C and Parietal Cell Function *W. Beil, W. Mannschedel, and K.-Fr. Sewing* 720

Conformational Predictive Studies on the Activation Segment of Pancreatic Procarboxypeptidases *M. Vilanova, F. X. Avilés, J. Vendrell, and E. Méndez* 729

Reduced Tumor Necrosis Factor-Induced Cytotoxicity by Inhibitors of the Arachidonic Acid Metabolism *Philip Suffys, Rudi Beyaert, Frans Van Roy, and Walter Fiers* 735

The Isolation of Polypeptides with FSH Suppressing Activity from Bovine Follicular Fluid Which Are Structurally Different from Inhibin *D. M. Robertson, R. Klein, F. L. de Vos, R. I. McLachlan, R. E. H. Wettenhall, M. T. W. Hearn, H. G. Burger, and D. M. de Kretser* 744

Structural Homology of Human Complement Component C8γ and Plasma Protein HC: Identity of the Cysteine Bond Pattern *Jacques-Antoine Haefliger, Dieter Jenne, Keith K. Stanley, and Jürg Tschopp* 750

Purification and Amino Acid Sequencing of NAF, a Novel Neutrophil-Activating Factor Produced by Monocytes *Alfred Walz, Paola Peveri, Heinrich Aschauer, and Marco Baggiolini* 755

Activation of Protein Kinase C by *cis*- and *trans*-Octadecadienoic Acids in Intact Human Platelets and Its Potentiation by Diacylglycerol *Roland Seifert, Christoph Schächtele, and Günter Schultz* 762

Translocation of Phospholipase A_2 from Cytosol to Membranes Induced by 1-Oleoyl-2-acetylglycerol in Serum-Free Cultured Macrophages *T. Schonhardt and E. Ferber* 769

Microtubule-Associated Proteins Bind to 30- and 60-kDA Proteins of Rat Brain Mitochondria: Visualization by Ligand Blotting *A. Rendon, D. Filliol, and V. Jancsik* 776

Human Submandibular Gland Statherin and Basic Histidine-Rich Peptide Are Encoded by Highly Abundant mRNAs Derived from a Common Ancestral Sequence *D. P. Dickinson, A. L. Ridall, and M. J. Levine* 784

Histone Variant Synthesis Patterns in Confluent Populations of Human Diploid Cells of Different *in Vitro* Ages *R. T. Dell'Orco and M. I. Worthington* 791

Sycamore Amyloplasts Can Import and Process Precursors of Nuclear Encoded Chloroplast Proteins *K. Strzalka, Jarunay Ngernprasirtsiri, A. Watanabe, and T. Akazawa* 799

Phosphorylated Epitopes of Neurofilaments Have Been Conserved during Chordate Evolution *Caterina Mencarelli, Massimo Bugnoli, Mario Contorni, Alessandra Moscatelli, Paolo Ruggiero,and Vitaliano Pallini* 807

Modulation of Tumor Necrosis Factor-α Cytotoxicity in L929 Cells by Bacterial Toxins, Hydrocortisone, and Inhibitors of Arachidonic Acid Metabolism *Anne Hepburn, Jean-Marie Boeynaems, Walter Fiers, and Jacques E. Dumont* 815

Reactivation of Affinity-Purified Estrogen Receptors by Peptides Derived from Histone H2B *Kalyan K. Bhattacharyya, Mark R. Olsen, and Gerald C. Mueller* 823

The Biosynthesis of Intestinal Sucrase-Isomaltase in Human Embryo Is Most Likely Controlled at the Level of Transcription *Gianfranco Sebastio, Walter Hunziker, Brigitte O'Neill, Christiane Malo, Daniel Ménard, Salvatore Auricchio, and Giorgio Semenza* 830

Volume 149, Number 3, December 31, 1987

AUTHOR INDEX, Volume 149, Number 3, December 31, 1987 iii

Xanthine Oxidase Activity in Mouse Pancreas: Effects of Caerulein-Induced Acute Pancreatitis *Zoltan J. Devenyi, John L. Orchard, and Robert E. Powers* 841

A Method to Isolate DNA Sequences That Are Promoter-Active in *Escherichia coli* and in Yeast *Ju Won Kwak, Jiyoung Kim, Ook Joon Yoo, and Moon Hi Han* 846

Type I IGF Receptors of Leydig Cells Are Upregulated by Human Chorionic Gonadotropin *T. Lin, J. Blaisdell, and J. F. Haskell* 852

Molecular Cloning and *in Vivo* Expression of a Precursor to Rat Mitochondrial Aspartate Aminotransferase *Joseph R. Mattingly, Jr., Francisco J. Rodriguez-Berrocal, Jack Gordon, Ana Iriarte, and Marino Martinez-Carrion* 859

A Fibroblast-Derived Urokinase Inhibitor Differing from Protease Nexin
Mikio Masuzawa, Hideaki Hamazaki, Kiyoshi Nishioka, Shigeo Nishiyama, and Terence J. Ryan 866
Observation of Inositol Pentakis- and Hexakis-Phosphates in Mammalian Tissues by ^{31}P NMR *Benjamin S. Szwergold, Robert A. Graham, and Truman R. Brown* 874
Lymphocyte Granule-Mediated Cytolysis Requires Serine Protease Activity
Dorothy Hudig, N. Janine Gregg, Chih-Min Kam, and James C. Powers 882
Superoxide Dismutase and Catalase Protect Cultured Hepatocytes from the Cytotoxicity of Acetaminophen *Marlene E. Kyle, Stefania Miccadei, Dai Nakae, and John L. Farber* 889
Heparin Inhibits Inositol Trisphosphate-Induced Calcium Release from Permeabilized Rat Liver Cells *Timothy D. Hill, Per-Olof Berggren, and Alton L. Boynton* 897
Peptides in Rat Brain Immunoreactive for the Amino Terminus of Cholecystokinin 33: Distribution and Chromatography *Song Ping Han, Lloyd R. Allard, and Margery C. Beinfeld* 902
Primary Sequence Analysis by Fast Atom Bombardment Mass Spectrometry of a Peptide with Adipokinetic Activity from the Corpora Cardiaca of the Cricket *Gryllus bimaculatus* *Gerd Gäde and Kenneth L. Rinehart* 908
The Accumulation of Platelet Activating Factor in the Injured Cornea May Be Interrelated with the Synthesis of Lipoxygenase Products
Haydee E. P. Bazan, Sridevi T. K. Reddy, Joseph M. Woodland, and Nicolas G. Bazan 915
Phenobarbital Specifically Increases the Hepatocellular Uptake of Sulfobromophthalein Glutathione *D. Sorrentino, V. Licko, R. A. Weisiger, G. Alpini, and P. D. Berk* 921
The Greater Strength of Arginine:Carboxylate over Lysine Carboxylate Ion Pairs: Implications for the Design of Novel Enzymes and Drugs
Dale B. Wigley, Andrew Lyall, Keith W. Hart, and J. John Holbrook 927
On Antisense Peptides: The Parathyroid Hormone as an Experimental Example and a Critical Theoretical View *Ulla B. Rasmussen and Rolf-Dieter Hesch* 930
Molecular Cloning, cDNA Structure, and Deduced Amino Acid Sequence for a Type I Regulatory Subunit of cAMP-Dependent Protein Kinase from Human Testis
Mårten Sandberg, Kjetil Taskén, Ole Øyen, Vidar Hansson, and Tore Jahnsen 939
Immunochemical Identification of Protein Kinase C Isozymes as Products of Discrete Genes *Freesia L. Huang, Yasuyoshi Yoshida, Hiroki Nakabayashi, John L. Knopf, W. Scott Young III, and Kuo-Ping Huang* 946
Nuclear Overhauser Effects as Probes of Peptide Structure. A Diagnostic for Left-Handed Helical Conformations *C. Ramakrishnan, M. Sukumar, and P. Balaram* 953
Expression of Chimeric Receptor Composed of Immunoglobulin-Derived V Regions and T-Cell Receptor-Derived C Regions *Yoshihisa Kuwana, Yoshihiro Asakura, Naoko Utsunomiya, Mamoru Nakanishi, Yohji Arata, Seiga Itoh, Fumihiko Nagase, and Yoshikazu Kurosawa* 960
The Early Competence Genes JE and KC Are Differentially Regulated in Murine Peritoneal Macrophages in Response to Lipopolysaccharide
T. J. Koerner, Thomas A. Hamilton, Martino Introna, Charles S. Tannenbaum, Robert C. Bast, Jr., and Dolph O. Adams 969
Pertussis and Cholera Toxin ADP-Ribosylation in *Dictyostelium discoideum* Membranes *Leili Khachatrian, Claudette Klein, and Allyn Howlett* 975
Different Localization of Receptors for ω-Conotoxin and Nitrendipine in Rat Brain
Motohiko Takemura, Hiroyuki Fukui, and Hiroshi Wada 982
Production of a Chemotactic Factor for Polymorphonuclear Leukocytes by Epithelioid Cells from Rat Renal Glomeruli in Culture
Kazuyoshi Watanabe and Hideo Nakagawa 989
High Affinity Binding of Human Interleukin 4 to Cell Lines
Hélène Cabrillat, Jean-Pierre Galizzi, Odile Djossou, Naoko Arai, Takashi Yokota, Kenichi Arai, and Jacques Banchereau 995
Sulfatide Bilayers as a Surface for Contact Activation in Human Plasma
G. Tans, A. J. Verkleij, J. Yu, and J. H. Griffin 1002
Insulin Stimulated Protein Phosphorylation in Human Plasma Liver Membranes: Detection of Endogenous or Plasma Membrane Associated Substrates for Insulin Receptor Kinase *José F. Caro, Jules A. Shafer, Simeon I. Taylor, S. M. Raju, Nichola Perrotti, and Madhur K. Sinha* 1008

Relationship between Plasma PGE_2 Level and Changes in Hemoglobin Proportions during Bleeding-Induced Anemia in Adult Rats
M. C. Datta, H. J. Spears, and H. A. Dowla 1017

The Major Erythrotropin of Bovine Cohn Fraction V Has the N-Terminal Sequence of Insulin-like Growth Factor II with Isoleucine at Position 35
L. F. Congote and F. Esch 1026

Cytotoxicity of a Novel Lipid-like Bacterial Product
T. Keler, E. Kovats, V. Nguyen, J. Samu, F. Sanavi, B. Somlyo, and A. Nowotny 1033

A Novel κ Agonist Inhibits [^{3}H]Nimodipine Binding to a Ca^{2+} Channel Receptor Protein in Rat Brain
V. C. Gandhi and D. H. Ross 1042

Evidence for Two Distinct Voltage-Gated Calcium Channel Currents in Bovine Adrenal Glomerulosa Cells
Hiroshi Matsunaga, Naohide Yamashita, Yoshio Maruyama, Itaru Kojima, and Kiyoshi Kurokawa 1049

Identification of α Atrial Natriuretic Peptides (4-28) and (5-28) in Porcine Brain
Shuzo Ueda, Tetsuji Sudoh, Kenji Fukuda, Kenji Kangawa, Naoto Minamino, and Hisayuki Matsuo 1055

Lipoxin Synthesis by Arachidonate 12-Lipoxygenase Purified from Porcine Leukocytes
Natsuo Ueda, Chieko Yokoyama, Shozo Yamamoto, Brian J. Fitzsimmons, Joshua Rokach, John A. Oates, and Alan R. Brash 1063

Interaction of Heme with a Synthetic Peptide Mimicking the Putative Heme-Binding Site of Histidine-Rich Glycoprotein
Masanao Katagiri, Ken Tsutsui, Toshio Yamano, Yasutsugu Shimonishi, and Fumihide Ishibashi 1070

Localization of Ribosomal Proteins on the Surface of Mammalian 60 S Ribosomal Subunits by Means of Immobilized Enzymes: Correlation with Chemical Crosslinking Data
Marie-Jeanne Marion and Christian Marion 1077

Inositol Glycan Mimics the Action of Insulin on Glucose Utilization in Rat Adipocytes
Alan R. Saltiel and Lynn R. Sorbara-Cazan 1084

c-*Fos* Expression in Human Skin Fibroblasts by Reperfusion after Oxygen Deficiency: A Recovery Change of Human Skin Fibroblasts after Oxygen Deficiency Stress
Yasuhiro Deguchi, Shigeru Negoro, and Susumu Kishimoto 1093

Glucocorticoid Receptor Binding to Defined Regions of α_{2u}-Globulin Genes
Patrick Van Dijck, Frédéric P. Lemaigre, Joris Winderickx, Guy G. Rousseau, and Guido Verhoeven 1099

Real-Time Visualization of Oxyradical Burst from Single Neutrophil by Using Ultrasensitive Video Intensifier Microscopy
Makoto Suematsu, Chikara Oshio, Soichiro Miura, and Masaharu Tsuchiya 1106

Hydroperoxide Lyase in Rabbit Leukocytes: Conversion of 15-Hydroperoxyeicosatetraenoic Acid to 15-Keto-pentadeca-5,8,11,13-tetraenoic Acid
Bing K. Lam, Yu-Ling Lin, Hsiao-Yung Ho, and Patrick Y.-K. Wong 1111

The Transcriptional Efficiency of Clustered tRNA Genes Is Affected by Their Position within the Cluster
Tommaso Russo, Adriana Oliva, Angela Duilio, Rosario Ammendola, Francesco Costanzo, Mariastella Zannini, and Filiberto Cimino 1118

Isolation of a Myofibroblast Growth Factor from Human Breast Carcinoma Cell Lines
Sanford H. Barsky and Rayudu Gopalakrishna 1125

Lower Number of Atrial Natriuretic Peptide Receptors in Thymocytes and Spleen Cells of Spontaneously Hypertensive Rats
Masaki Kurihara, Eero Castrén, J. Silvio Gutkind, and Juan M. Saavedra 1132

Formation of 8-Hydroxyguanine Residues in DNA Treated with 4-Hydroxyaminoquinoline 1-Oxide and Its Related Compounds in the Presence of Seryl-AMP
Kohfuku Kohda, Mariko Tada, Atsushi Hakura, Hiroshi Kasai, and Yutaka Kawazoe 1141

Production of Human Thyroid-Stimulating Hormone in Chinese Hamster Ovary Cells
Sachihiko Watanabe, Yoshihide Hayashizaki, Yuichi Endo, Machiko Hirono, Noriko Takimoto, Mikio Tamaki, Hiroshi Teraoka, Kiyoshi Miyai, and Kenichi Matsubara 1149

Purification and Properties of a Non-histone Chromatin Protein with a Molecular Weight of 38,000 Da Specific for Transformed Rat Cells
Tatsuo Nakayama, Maki Irikura, Yoshiko Setoguchi, Hisayuki Matsuo, Hirokazu Inoue, Masuo Yutsudo, and Akira Hakura 1156

A Zebrafish Homeobox-Containing Gene with Embryonic Transcription
Hans G. Eiken, Pål R. Njølstad, Anders Molven, and Anders Fjose 1165
Properties of Recombinant Hepatitis B Vaccine
Takao Ohmura, Akimasa Ohmizu, Akinori Sumi, Wataru Ohtani, Yahiro Uemura, Hirofumi Arimura, Masayuki Nishida, Yasuhiro Kohama, Masaru Okabe, Tsutomu Mimura, and Charles M. Heldebrant 1172
Regulation of Angiotensin Converting Enzyme Activity in Cultured Human Vascular Endothelial Cells *Naoharu Iwai, Masato Matsunaga, Toru Kita, Masahiko Tei, and Chuichi Kawai* 1179
Different Distribution of Two Types of Angiotensin II-Generating Enzymes in the Aortic Wall *Hideki Okunishi, Mizuo Miyazaki, Tomio Okamura, and Noboru Toda* 1186
Response of Human Platelets Exposed to Arachidonate upon Stimulation with Other Agonists: Possible Role of Ca_i^{2+} Movement
Z. M. Chen, C. Cerletti, G. de Gaetano, and V. Bertelé 1193
Interaction of 5-Fluoro-4-thio-2′-deoxyuridine 5′-Phosphate with Mammalian Tumor Thymidylate Synthase: Role of the Pyrimidine N(3)–H Dissociation
Jolanta M. Dzik, Tadeusz Kulikowski, Zbigniew Zielinski, Joanna Ciesla, Wojciech Rode, and David Shugar 1200
Inositol 1,2-Cyclic 4,5-Trisphosphate Is Formed in the Rat Parotid Gland on Muscarinic Stimulation *John F. Dixon and Lowell E. Hokin* 1208
Carboxyl Terminal Analysis of Human B-48 Protein Confirms the Novel Mechanism Proposed for Chain Termination *David A. Hardman, Andrew A. Protter, James W. Schilling, and John P. Kane* 1214
ERRATA
Volume 148, Number 2, October 29, 1987: Charles L. Hoppel, David Greenblatt, Hung-chi Kwok, Pramod K. Arora, Malvinder P. Singh, and Lawrence M. Sayre, "Inhibition of Mitochondrial Respiration by Analogs of 4-Phenylpyridine and 1-Methyl-4-phenylpyridinium Cation (MPP^+), the Neurotoxic Metabolite of MPTP," pp. 684–693 1220
Volume 148, Number 2, October 29, 1987: Pietro Cenini, Maria Giulia Battelli, Andrea Bolognesi, Fiorenzo Stirpe, and Clarence L. Villemez, "Effect of Ribosome-Inactivating Proteins on Ribosomes from *Tetrahymena pyriformis* and *Acanthamoeba castellanii*," pp. 521–527 1220
Volume 148, Number 3, November 13, 1987: B. J. Potter, D. Stump, W. Schwieterman, D. Sorrentino, L. N. Jacobs, C.-L. Kiang, J. H. Rand, and P. D. Berk, "Isolation and Partial Characterization of Plasma Membrane Fatty Acid Binding Proteins form Myocardium and Adipose Tissue and Their Relationship to Analogous Proteins in Liver and Gut," pp. 1370–1376 1222
Author Index for Volume 149 1223
The Subject Index for Volume 149 will appear as part of a cumulative index for the year 1987.